UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,401	12/12/2003	Mi-Sook Nam	8733.993.00-US	9111

30827 7590 04/03/2007

MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER	
SHERMAN, STEPHEN G	
ART UNIT	PAPER NUMBER
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,401	NAM ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment filed the 5 March 2007. Claims 1-23 are pending.

Response to Arguments

2. Applicant's arguments filed with respect to claims 1-20 have been fully considered but they are not persuasive.

On page 8 of the applicant's response, the applicant argues that the Examiner has misunderstood the teachings of Yanagi. The applicant states that since Yanagi discloses providing a light filter sheet on the front face of the optical diffusion plate to obtain superior hue, that Yanagi merely teaches the desirability of adding a light filter sheet and thus none of the cited prior art suggests the desirability of the claimed invention. The examiner respectfully disagrees. First of all, the examiner did not misunderstand the teachings of Yanagi. Yanagi's invention is in regards to the addition of a light filter sheet in conjunction with a sequential backlight. The advantage to Yanagi's invention is with **both** the light filter sheet and the sequential backlight. The claim language does not prevent the examiner from using the filter with the sequential backlight as being beneficial. The examiner asserts that the filter does not work on its own, and therefore its advantage is to be used with a sequential backlight. Furthermore, Paragraph [0030] of Yanagi specifically states that the excellent hue is

obtained in conjunction with using the field sequential LCD, and thus as stated in the rejection by the examiner, Yanagi teaches of using a sequential backlight in which superior hue can be established. Thus, the cited references teach the invention as claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa et al. (US 2006/0152658) in view of Ozawa (US 7,092,062) and further in view of Yanagi (JP 2000-111910 A).

Regarding claim 1, Ozawa et al. disclose a trans-reflective liquid crystal display device comprising:

a plurality of data and gate lines defining a plurality of pixels (Figure 12 and paragraph [0160] explain that scanning lines 151 and data lines 152 have pixels 153 formed at their intersection.), the pixels having a reflection region and a transmission region (Figure 6B shows a pixel structure containing a reflection region and a transmission region.);

a timing controller that receives, converts, and outputs image data (Figure 21 and paragraphs [0193]-[0194] explain that timing generator 573 controls the display-data outputting source 570 and the display-data processing circuit 571 to output display data.);

a gate driver that receives a gate signal from the timing controller (Figure 12 shows a scanning driver circuit 157 as explained in paragraphs [0160] and [0195].);

a data driver that receives a data signal from the timing controller (Figure 12 shows a data driver circuit 158 as explained in paragraphs [0160] and [0195].);

a liquid crystal display panel with a TFT array substrate and a color filter substrate, the liquid crystal display panel displaying the image according to a gate pulse and a data voltage applied by the gate driver and the data driver (Figure 13 and paragraphs [0160]-[0161] and [0169] explain that there is a TFT substrate and a substrate for the color filters, and also the scanning and data drivers driver the scanning and data lines, which would be done by gate pulses and data voltages.); and

a backlight (Paragraph [0072] and Figure 6B).

Ozawa et al. fail to explicitly teach of a switching unit that determines the output signal of the timing controller according to a transmission mode or reflection mode, wherein the backlight is turned on in a transmission mode to sequentially transmit the light into the transmission region and is turned off in a reflection mode.

Ozawa discloses that in a display utilizing a reflective and transmissive mode in which the modes are switched based upon the detection of the ambient light (Column 1, lines 18-35.), wherein the backlight is turned on in a transmission mode to sequentially transmit the light into the transmission region and is turned off in a reflection mode (Column 1, lines 18-35, the examiner understands that when in the reflection mode the backlight would be turned off since power savings is achieved.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the switching mode taught by Ozawa with the trans-reflective liquid crystal device taught by Ozawa et al. in order to present a distinct display under dark conditions while saving power.

Ozawa et al. and Ozawa fail to disclose that the backlight is a sequential backlight including red, green, and blue lamps.

Yanagi discloses of a sequential backlight including red, green and blue lamps (Drawing 1 and paragraphs [0011]-[0012] explain of a sequential backlight using red, green and blue.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use a sequential backlight as taught by Yanagi with the

trans-reflective display taught by the combination of Ozawa et al. and Ozawa in order to provide a display in which superior hue can be established.

Regarding claim 2, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display device of claim 1.

Ozawa et al. also disclose wherein the color filter substrate includes a color filter formed in the reflection region (Paragraph [0169] explains that there is a color filter ib the reflection region, see also Figure 6B.).

Regarding claim 3, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display device of claim 1.

Yanagi also discloses a device further comprising a backlight controller connected to the sequential backlight to control the timing of the light emissions in the transmission mode (Drawing 3 and paragraph [0020].).

Regarding claim 4, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display device of claim 1.

Although Ozawa et al., Ozawa and Yanagi fail to explicitly teach wherein the data driver includes a MUX circuit shorting three adjacent data lines, the MUX circuit being turned on in the transmission mode and turned off in the reflection mode, the examiner interprets that given the combination of references, that when the backlight is on that the same display data will be transmitted to three adjacent data line (red, green and

blue), as explain in Yanagi in Drawing 5 that shows the same data voltage being applied during every sub frame, and that when the backlight is OFF that the display data applied to the pixels will all be different since the reflection through the color filter will create the color of the display.

Regarding claim 5, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display device of claim 1.

Yanagi also discloses wherein the lamp backlight includes a light emitting diode (Drawing 1).

Regarding claim 6, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display device of claim 1.

Ozawa et al. also disclose wherein the cell gap between in the transmission region is twice that in the reflection region (Figure 6B shows that the cell gap in the transmission region, represented by d, can be seen to be twice the size of the gap in the reflection region.).

Regarding claim 7, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display device of claim 1.

Yanagi also discloses wherein a timing controller divides one frame of display data into three sub-frames (Drawing 5a and 5b show that the a frame is divided into a section of displaying red, one for displaying green and one for displaying blue.).

Regarding claim 8, this claim is rejected under the same rationale as claim 1.

Regarding claim 9, please refer to the rejection of claim 7, and further more Yanagi also discloses of applying the same data voltage to the adjacent three pixels every sub frame in the transmission mode (Drawing 5 shows that the same data voltage is applied during every sub frame.).

Regarding claim 10, please refer to the rejection of claim 4.

Regarding claim 11, please refer to the rejection of claims 1 and 2, and furthermore Ozawa et al. also disclose a reflective electrode in the reflection region to reflect light incident from outside the liquid crystal panel (Figure 6B shows the reflecting electrode 4 as explained in paragraph [0118].).

Regarding claim 12, this claim is rejected under the same rationale as claim 5.

Regarding claim 13, Ozawa et al., Ozawa and Yanagi disclose the liquid crystal display device of claim 11.

Ozawa et al. also disclose wherein the liquid crystal panel includes:

a second substrate (Figure 6B shows substrate 20.); and

a liquid crystal layer between the first and second substrate (Figure 6B shows a liquid crystal layer 50.).

Regarding claim 14, Ozawa et al., Ozawa and Yanagi disclose the liquid crystal display device of claim 11.

Ozawa et al. also disclose wherein the switching device includes a thin film transistor (Figure 18).

Regarding claim 15, this claim is rejected under the same rationale as claim 6.

Regarding claim 16, please refer to the rejection of claim 1.

Regarding claim 17, please refer to the rejection of claim 1.

Regarding claim 18, this claim is rejected under the same rationale as claim 3.

Regarding claim 19, please refer to the rejection of claim 1.

Regarding claim 20, this claim is rejected under the same rationale as claim 4.

6. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozawa et al. (US 2006/0152658) in view of Ozawa (US 7,092,062) and further in view of Yanagi (JP 2000-111910 A) and Kubota et al. (US 2004/0145691).

Regarding claim 21, Ozawa et al., Ozawa and Yanagi disclose the trans-reflective liquid crystal display of claim 1.

Ozawa et al., Ozawa and Yanagi fail to teach wherein the light from the backlight passes through the color filter substrate unfiltered.

Kubota et al. disclose a trans-reflective display wherein the light from the backlight passes through the color filter substrate unfiltered (Paragraph [0028]).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the teaching of Kubota et al. with the trans-reflective display taught by the combination of Ozawa et al., Ozawa and Yanagi in order to provide a trans-reflective display wherein by employing the field sequential technique a high brightness display can be realized in the transmissive display and since there is no need for color filters in the transmissive section, there is no need to concern about a reduction in intensity due to reflection and the like caused by the color filter (See Kubota et al., paragraph [0029].)

Regarding claim 22, Ozawa et al., Ozawa and Yanagi disclose the method of claim 8.

Ozawa et al., Ozawa and Yanagi fail to teach wherein the light from the backlight does not pass through a color layer.

Kubota et al. disclose a method wherein the light from the backlight does not pass through a color layer (Paragraph [0028]).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the teaching of Kubota et al. with the trans-reflective display taught by the combination of Ozawa et al., Ozawa and Yanagi in order to provide a trans-reflective display wherein by employing the field sequential technique a high brightness display can be realized in the transmissive display and since there is no need for color filters in the transmissive section, there is no need to concern about a reduction in intensity due to reflection and the like caused by the color filter (See Kubota et al., paragraph [0029].)

Regarding claim 23, Ozawa et al., Ozawa and Yanagi disclose the liquid crystal display device of claim 11.

Ozawa et al., Ozawa and Yanagi fail to teach wherein the color layer is only in the reflective region.

Kubota et al. disclose a trans-reflective display wherein the color layer is only in the reflective region (Paragraph [0028]).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the teaching of Kubota et al. with the trans-reflective display taught by the combination of Ozawa et al., Ozawa and Yanagi in order to provide a

trans-reflective display wherein by employing the field sequential technique a high brightness display can be realized in the transmissive display and since there is no need for color filters in the transmissive section, there is no need to concern about a reduction in intensity due to reflection and the like caused by the color filter (See Kubota et al., paragraph [0029].)

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

27 March 2007